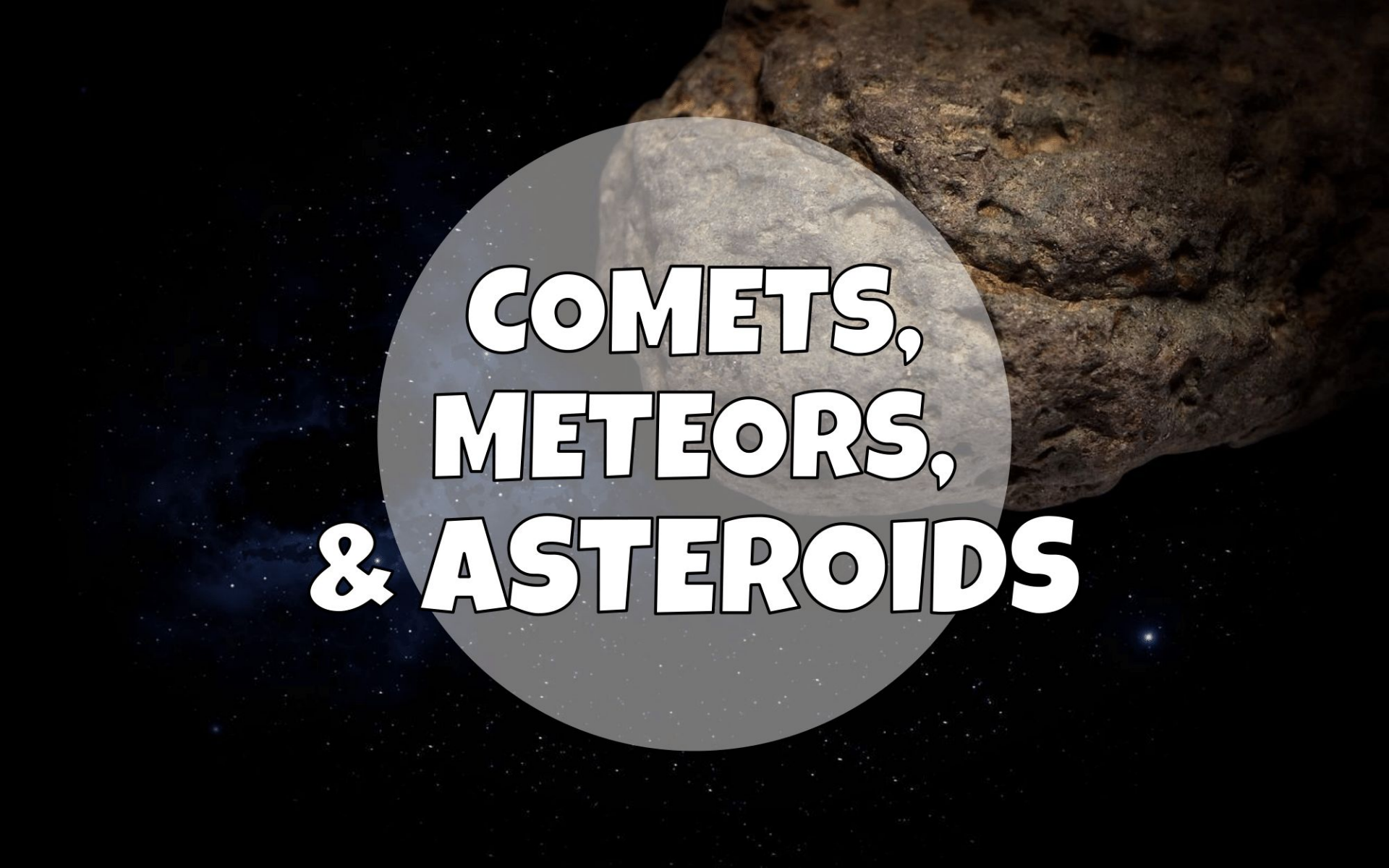
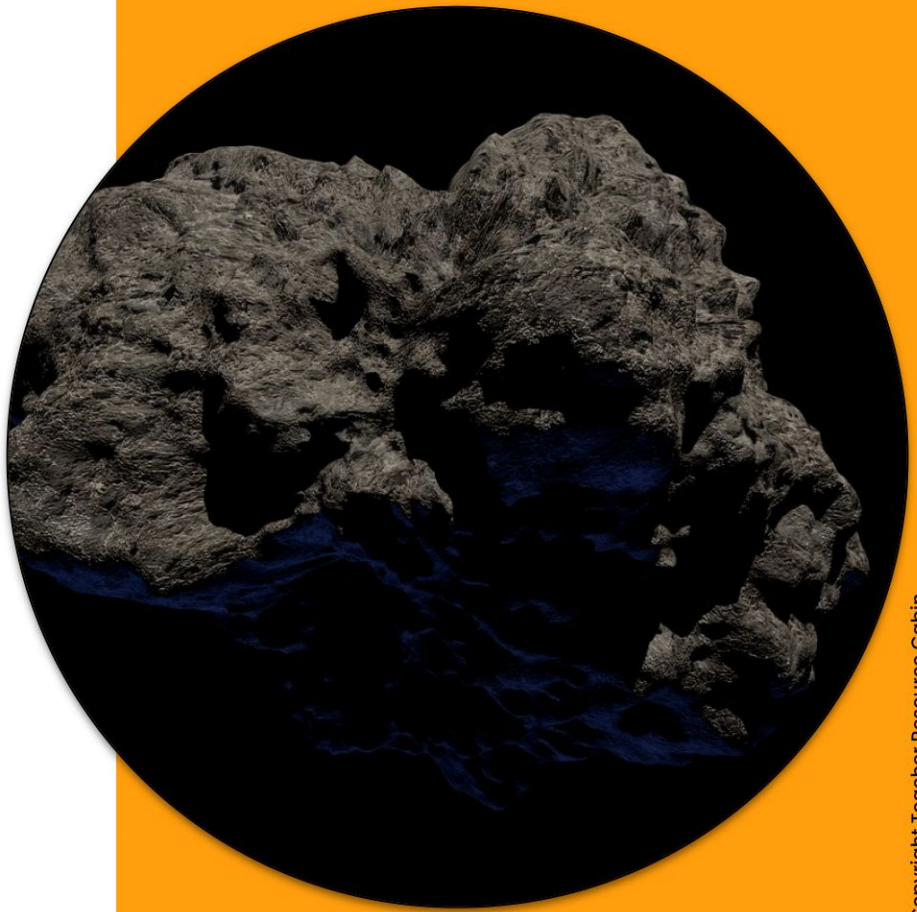

COMETS,
METEORS,
& ASTEROIDS

ASTEROIDS

- An asteroid is a small, rocky object that orbits the Sun.

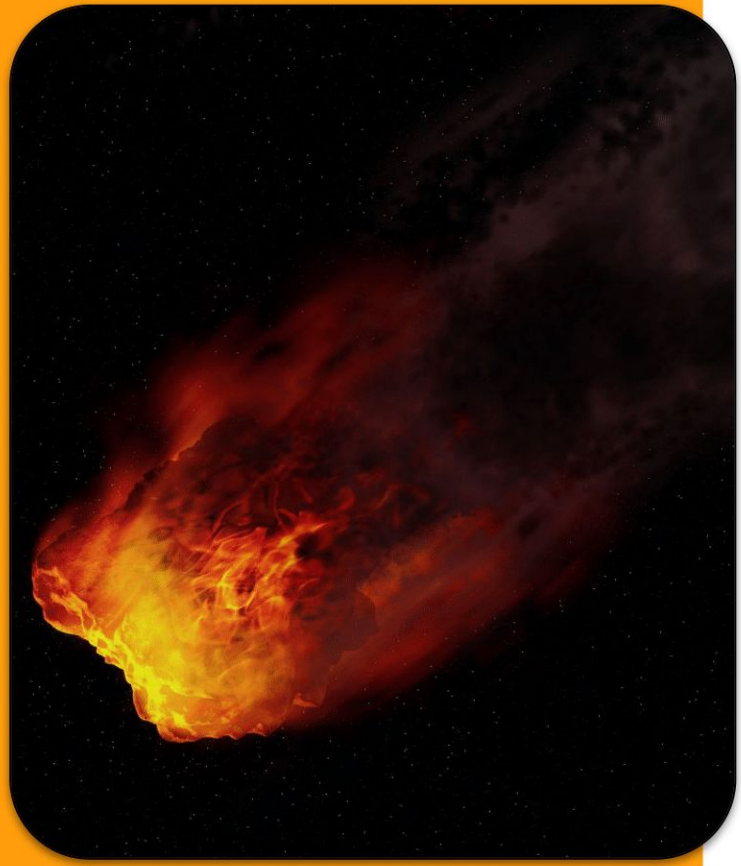
- Most asteroids in our solar system are found in the asteroid belt, a region between Mars and Jupiter.



COMETS

- A comet is a ball of frozen gas and dust that orbits around the Sun.
- Short-period comets take less than 200 years to orbit the Sun.
    - The comet with the longest known orbit takes over 250 000 years to orbit the Sun!

METEOR

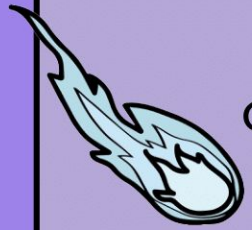


- A meteor (or meteoroid) is a small piece of an asteroid or comet that breaks apart and enters the Earth's atmosphere.

- As the meteor falls toward the Earth, the drag resistance causes it to get extremely hot.

Think about it!

Distinguish between comets, meteors, and asteroids by writing their definitions below.

 Comets	
 Meteors	
 Asteroids	


MOONS

MOONS

- A moon is a natural rock object that orbits around a planet.

- Most planets have at least one moon.
  - The Earth's Moon is about 384 000 km away.

Do you think planets can have more than one moon?

MOONS

DID YOU KNOW?

Saturn has 83 moons.

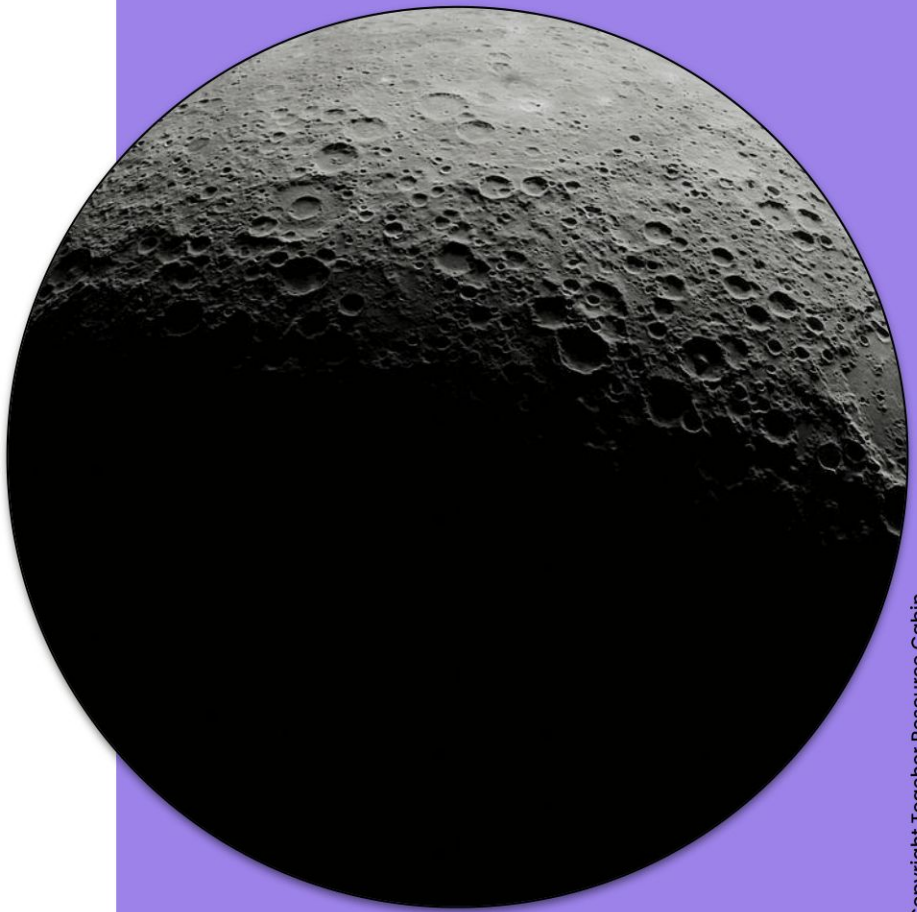
Jupiter has 80 moons.

Mercury and Venus do not have any moons!

MOONS

- The moon is a rocky, solid surface.

- The surface of the moon is cratered due to meteors crashing into the moon's surface.
  - A meteor that makes contact with land is called a meteorite.



MOONS

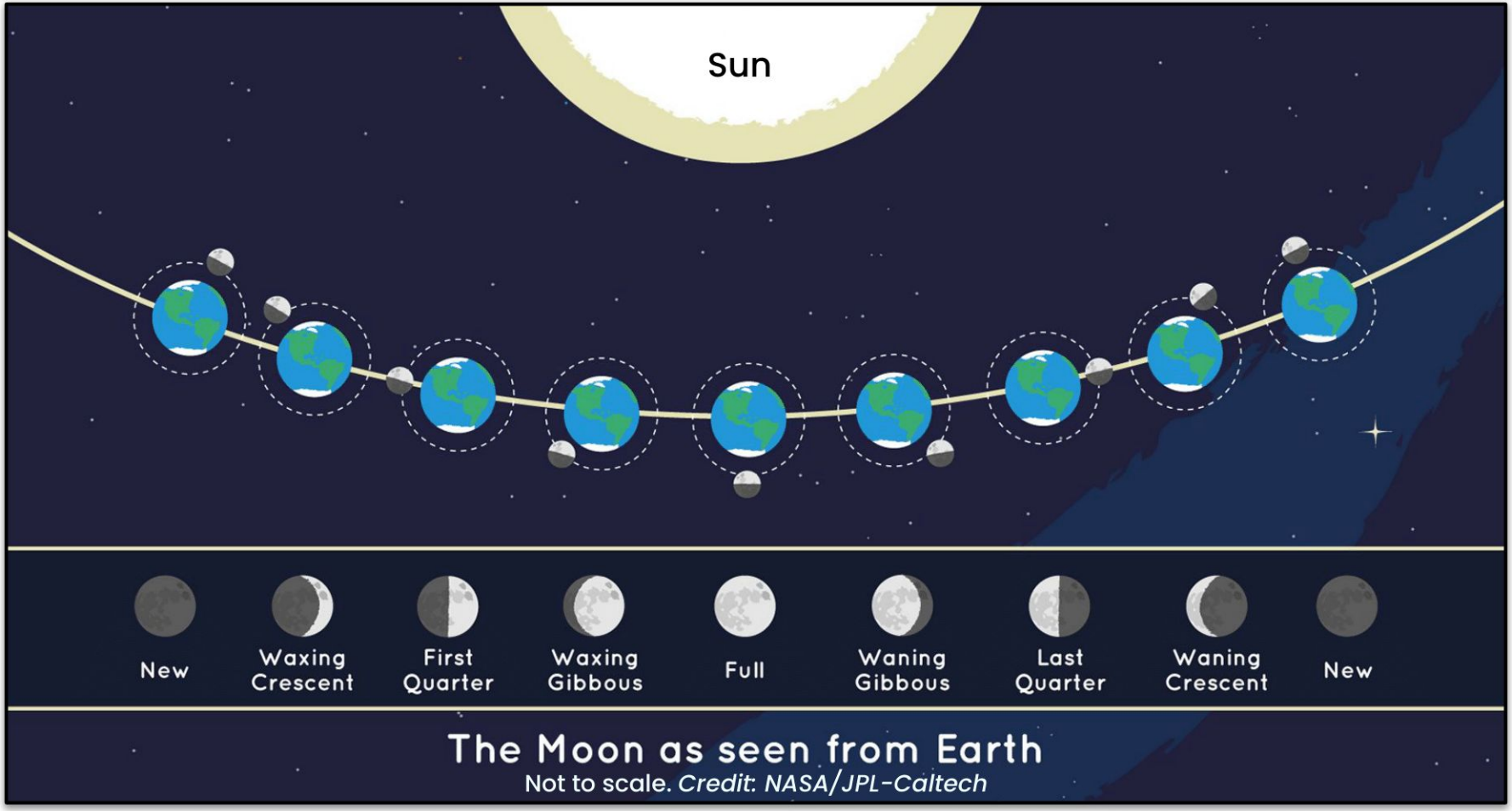
- Both moons and planets do not create or emit their own light.
  - They reflect the light from stars such as the Sun.

- The position of Earth, the moon and the Sun determines how much of the moon is visible from Earth.

MOONS

- When Earth's moon is fully visible, it is called a full moon.
- Each day after, the moon becomes less visible until the fifteenth day, when it cannot be seen.
- After the fifteenth day, crescent moons begin to appear.
- The crescent moons increase in size until the moon becomes fully visible again.

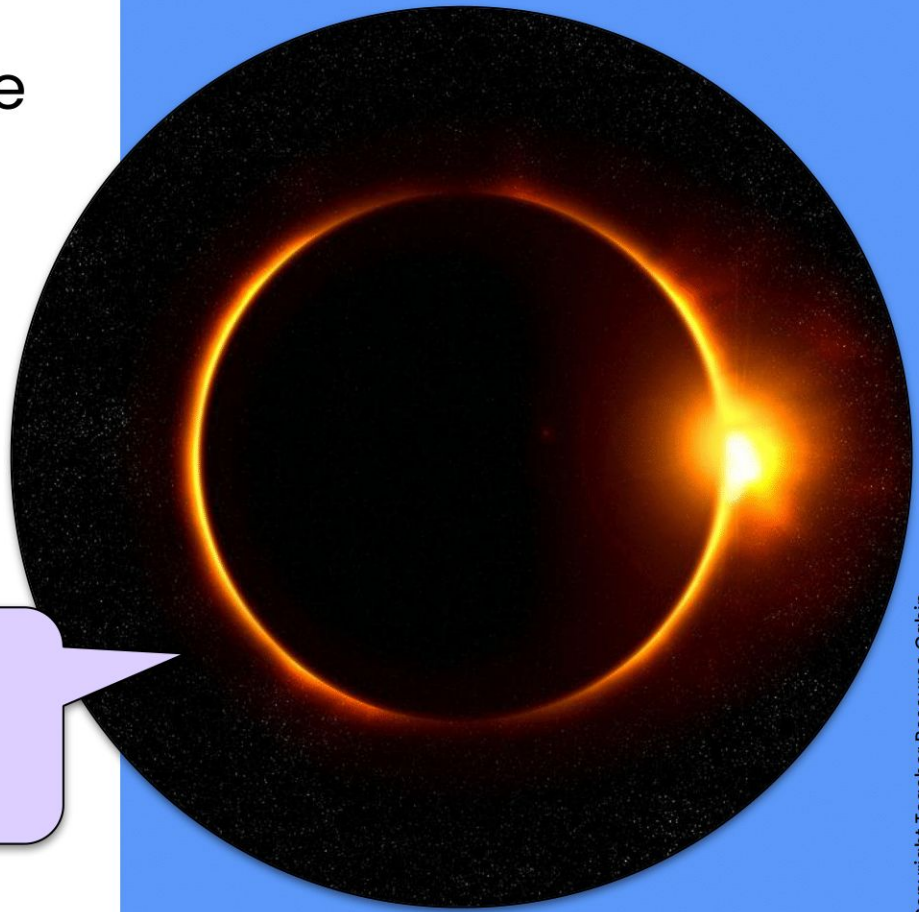
PHASES OF THE MOON



ECLIPSES

- An eclipse occurs when one celestial body moves into the shadow of another celestial body.
- There are solar eclipses, and lunar eclipses.

What facts do you already know about eclipses?



LUNAR ECLIPSES

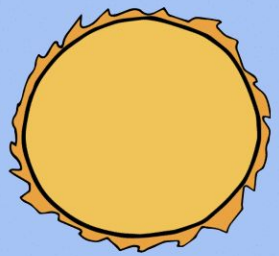
- A lunar eclipse occurs when **Earth's shadow** falls on the moon.
- In a solar eclipse, Earth blocks the sunlight that normally is reflected by the moon.
  - Typically last for a few hours.
  - Can be **safely observed** by the human eye
- Average of two lunar eclipses per year.

SOLAR ECLIPSES

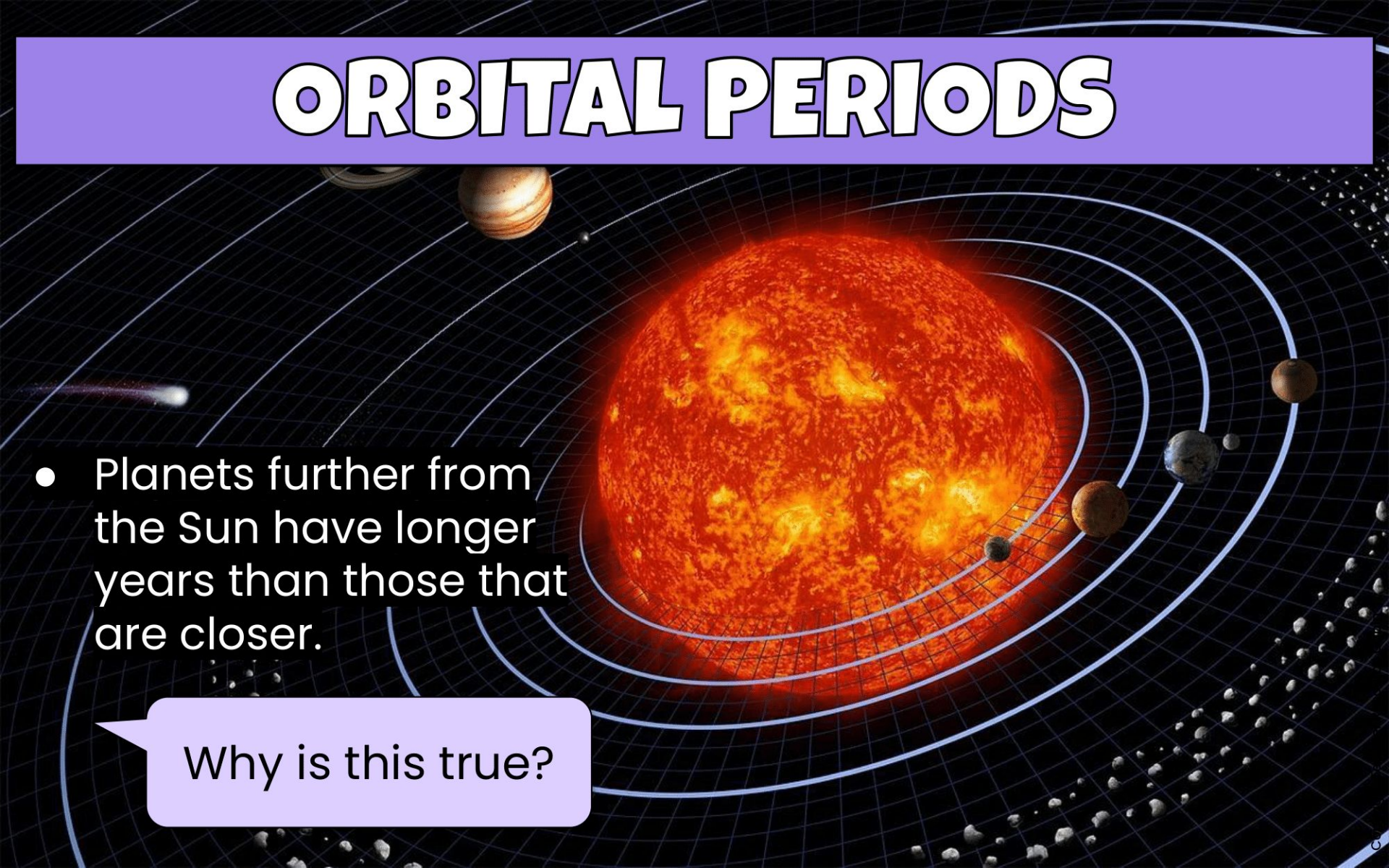
- A solar eclipse occurs when the **shadow of the moon** falls on the Earth.
  - Occur once every 18 months and last for only a few minutes
- Though the Sun may appear darkened, it is damaging to the human eye.
  - Should not be viewed without **proper protection**

Think about it!

Explain how a lunar eclipse is different from a solar eclipse. Write an interesting fact for each.

Lunar Eclipse 	
Solar Eclipse 	

ORBITAL PERIODS



- Planets further from the Sun have longer years than those that are closer.

Why is this true?

ORBITAL PERIODS

- The length of time to orbit the Sun is called the orbital period.
    - The orbital period on Earth is **365 days**!

What planets would have the shortest and longest orbital periods?

EARTH'S SEASONS

- A year on Earth takes 365 days.
  - Some places on Earth experience 4 seasons each year.

- Depending on where you are located in the world, these seasons can differ **greatly in temperature**.

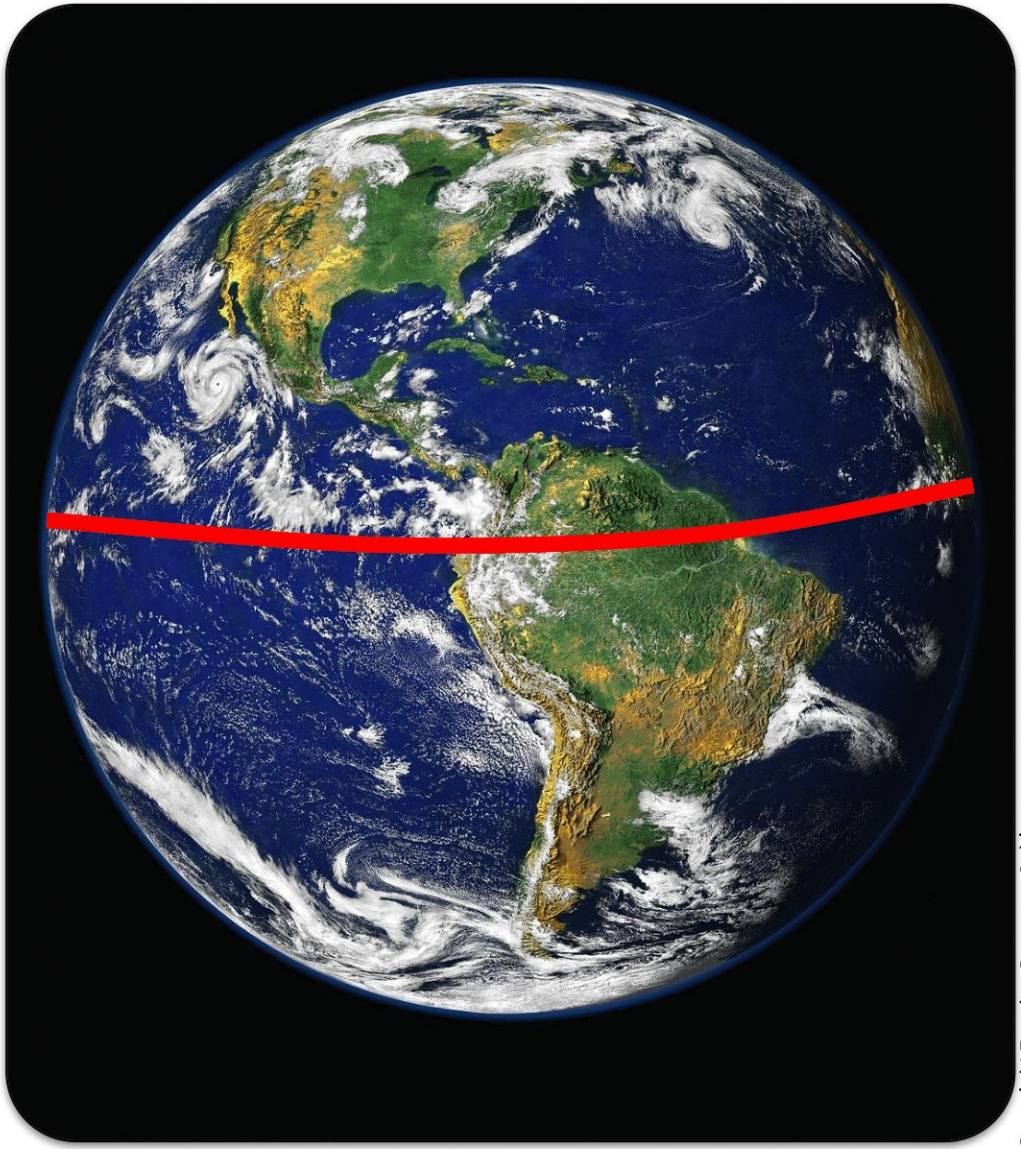
EARTH'S SEASONS

- In Ontario, summers can be very hot, yet winter can bring freezing cold temperatures and snow.

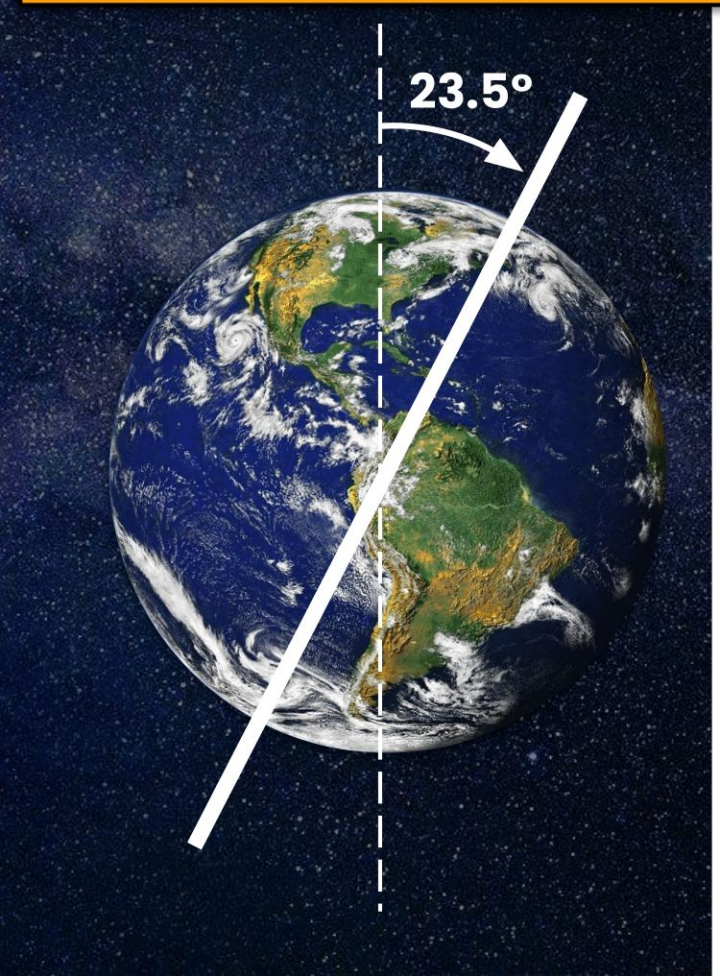
- Locations closer to the Earth's **equator** usually have **less drastic** temperature fluctuations, staying warm most of the year.

? ? ?

What countries are located close to Earth's equator?



EARTH'S SEASONS



- Seasons are caused by the tilt of the Earth on its axis.
  - Earth is tilted at a **23.5-degree angle**.

- The North Pole faces the Sun for half of the year and the South Pole faces the Sun for the other half.

Think about it!

Label the four seasons that would be experienced in Canada based on the tilt of the Earth in the diagram.